Amendment to Claims

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims

Claims 1-8 (cancelled)

Claim 9 (new): A computer-based design system for performing engineering design calculations and integrating market data, both technical and financial, for optimal piping design comprising:

an integrated pipe design, selection and full function procurement system including:

a project definition module having a project, case tree structure and data storage capabilities for logical storage, retrieval, and use for enabling a user to keep track of various projects and alternative cases, use existing data of dated projects to create a new project and thereby eliminating repeated entry of standard data, and operable to store and retrieve data to perform additional calculations;

a hydraulics design module for performing hydraulics calculations necessary for mechanical design;

a pipe mechanical design module;

an interface for dynamic connectivity between market data;

a search and selection module considering optimization objective functions and constraints;

a results display module; and

a decision module that enables iterations at multiple levels for refining search and optimizing results.

Claim 10 (new) A computer based integrated probabilistic optimized risk based design system operable to use dynamic market technical and financial data coupled with constrained based optimization techniques for optimal failure risk weighted product design and procurement, said system comprising:

a project definition module having a project, case tree structure and data storage capabilities for logical storage, retrieval, and use for enabling a user to keep track of various projects and alternative cases, use existing data of related projects to create a new project and thereby eliminate entry

of standard data, and operable to store and retrieve data to perform additional calculations;

a load calculation module operable to consider different limit states and selected physical parameters including the variability thereof to determine the probability distribution function of load;

a module operable to consider the range of materials to be selected;

an input module for determining commercial and optimization parameters;

a module for specifying design parameters and design methods;

an interface for dynamic connection to probabilistic technical data from the marketplace;

a design calculation module, which uses said technical data to perform design and engineering and optimization calculations including the quantification of equipment failure risks;

a search selection module operable to use optimization results;

a results display module;

a decision module that enables multiple iteration entry points to further optimize and refine selection; and

a marketplace and back office connectivity layer that enables back office processes and full function procurement.

Claim 11 (new) : A system for dynamic integrated collaborative engineering and procurement business process supply chain for improved and optimized equipment design, improved cycle time and improved productivity, said system being operable on a computer, said system comprising:

a web-centric software technology hub operable to integrate engineering technologies and commercial back office and procurement systems;

a link subsystem providing real-time links to external marketplaces to collect probability distribution of strength of material, pricing and availability data;

a link subsystem operable to connect buyers and sellers for transactions and fulfillment;

a design and engineering subsystem operable to access and use real-time market data;

a subsystem operable to analyze results, evaluate alternative scenarios and search for better results;

a direct link to a back office system and to a marketplace for procurement; and

a dynamic link to a marketplace to execute all marketplace functions including transactions, financial services, fulfillment and logistics.

Claim 12 (new) The system set forth in claim 11 further comprising:

a hub connected to the Internet, which hosts all technologies, specific content and data, marketplace functionalities and links to selected marketplaces and services;

a local format for a system database, which is specific to the technologies and their operations;

a security system operable to enable users to store and access user project specific data on a continual basis; and

a secure system that will mark and store supplier data that is unique to a user.

Claim 13 (new) : The system set forth in claim 11 including:

an extension operable to enable the deployment of the hub on a client infrastructure for access on local area networks.

Claim 14 (new) : A method for carrying out design and engineering technologies, integration methods and optimization of an engineering-to-procurement business process supply chain, comprising:

storing all necessary information related to such design, engineering and procurement and processes in a computer in one of a random access memory, magnetic storage device, and an optical storage device;

linking said computer to at least one user terminal through a data communication link; and

displaying, at said user terminal, information pertaining to said design, engineering and procurement and processes.

Claim 15 (new) : The method set forth in claim 14, further comprising:

storing information selected from a group consisting of all parameters and probability distribution functions required in design, engineering and optimization calculations, risk factors and historical values of various categories of risk used to evaluate risk weighted decisions, all data related to procurement, financial, and fulfillment functions, equipment and material data comprising material specification, codes, and reference numbers, and market data comprising availability, quantity, inventory, shipping methods and duration, rates and user specific rates.

Claim 16 (new) : A computer-based method for probabilistic design and for simultaneously combining engineering and commercial variables for optimal failure risk weighted economic decisions comprising:

(a) constructing engineering equations and optimization objective functions and constraints;

(b) providing a set of methods and algorithms to solve different classes of equations; and

using steps (a) and (b) in a probabilistic framework to determine failure risk and reliability-weighted optimization.